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Studies of upper limb amputation and use of 3D printed robotic hand to restore the functions after critical hand injuries

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Upper limb amputation drastically reduced the quality of life for patients, 2 simple actions that we use daily, such as eating and drinking, holding objects and dressing all become major challenges. The objective of this study is how to reap the benefit of 3D printing technology and design the robotic hands (prosthetic hands) for the kids and adults that help them to get their work done effortlessly. To understand how the adoption of 3D printed electronic prosthetic hands enhance the life of a person after amputation and how they help the amputee to perform daily actions such dressing, eating and other daily challenges that they face after the amputation about 100 artificial electronic prosthetic devices were printed using 3D printing and was fitted without causing any harm to the patient body. Fitted devices were examined regularly over a period of 6 months and the information gathered from the patient feedback was stored in computer for the further research. Looking at the feedback of the patients it was found that the usability of the hand increases by 80% and such positive result were found based on the functionality and weight of the device as compare to previous devices such as Alimco artificial hands. Our study showed that the expectance and usability of prosthetic devices depends on not only the functionality of the device but also on several other factors such as weight, operating methods, cost and based on the feedback it was found that the advent of 3D printing technology has filled these gaps and helped the users to get their daily challenges done.

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